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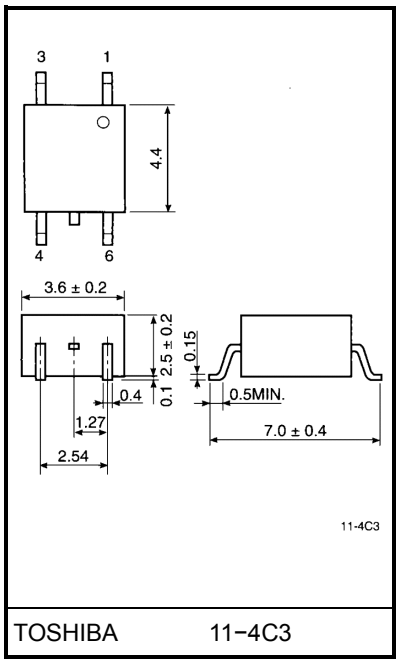
TOSHIBA Photocoupler GaAs Ired & Photo−Triac

TLP165J

Triac Drive
Programmable Controllers
AC−Output Module
Solid State Relay

Unit in mm



TOSHIBA 11−4C3

Weight: 0.09 g

The TOSHIBA mini flat coupler TLP165J is a small outline coupler, suitable for surface mount assembly.
The TLP165J consists of a photo triac, optically coupled to a gallium arsenide infrared emitting diode.

- Peak off−state voltage: 600 V (min.)
- Trigger LED current: 10 mA (max.)
- On−state current: 70 mA (max.)
- Isolation voltage: 2500 Vrms (min.)
- UL recognized: UL1577, file no. E67349
- Option(V4)type
  VDE approved: VDE 0884 satisfied
  Maximum operating insulation voltage: 565Vpk
  Highest permissible over voltage: 4000Vpk

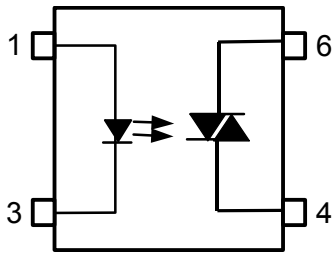
Trigger LED Current

Type (Note 1)	Trigger LED Current (mA) V_T=6V, Ta=25°C		Marking Of Classification
	Min.	Max.	
(IFT7)	—	7	T7
None	—	10	T7, blank

* Exp. rank IFT7: TLP165J (IFT7)

(Note 1) Application type name for certification test, please use standard product type name, i.e.
TLP165J(IFT7): TLP165J

Pin Configurations



1 . Anode
3 . Cathode
4 . Terminal 1
6 . Terminal 2

Maximum Ratings (Ta = 25°C)

Characteristic			Symbol	Rating	Unit
LED	Forward current		I_F	50	mA
	Forward current derating (Ta ≥ 53°C)		ΔI_F / °C	−0.7	mA / °C
	Peak forward current (100μs pulse, 100 pps)		I_{FP}	1	A
	Reverse voltage		V_R	5	V
	Junction temperature		T_j	125	°C
Detector	Off− state output terminal voltage		V_{DRM}	600	V
	On−state RMS current	Ta=25°C	$I_{T(RMS)}$	70	mA
		Ta=70°C		40	
	On−state current derating (Ta ≥ 25°C)		ΔI_T / °C	−0.67	mA / °C
	Peak on−state current (100μs pulse, 120 pps)		I_{TP}	2	A
	Peak nonrepetitive surge current (PW=10ms, DC=10%)		I_{TSM}	1.2	A
	Junction temperature		T_j	115	°C
Storage temperature range			T_{stg}	−55~125	°C
Operating temperature range			T_{opr}	−40~100	°C
Lead soldering temperature (10s)			T_{sol}	260	°C
Isolation voltage (AC, 1 min., R.H. ≤ 60%) (Note 2)			BV_S	2500	Vrms

(Note 2) Device considered a two terminal device: Pins 1 and 3 shorted together and 4 and 6 shorted together.

Recommended Operating Conditions

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Supply voltage	V_{AC}	—	—	240	Vac
Forward current	I_F	15	20	25	mA
Peak on−state current	I_{TP}	—	—	1	A
Operating temperature	T_{opr}	−25	—	85	°C

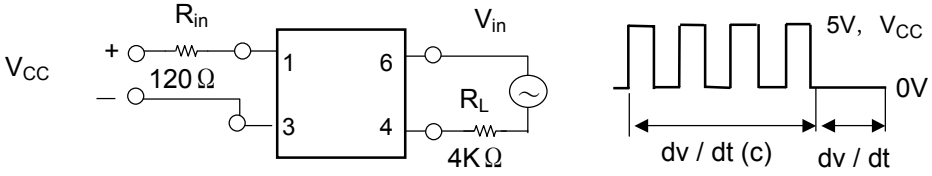
Electrical Characteristics (Ta = 25°C)

Characteristic		Symbol	Test Condition	Min.	Typ.	Max.	Unit
LED	Forward voltage	V_F	I_F=10mA	1.0	1.15	1.3	V
	Reverse current	I_R	V_R=5V	—	—	10	μA
	Capacitance	C_T	V=0, f=1MHz	—	30	—	pF
Detector	Peak off−state current	I_{DRM}	V_{DRM}=600V	—	10	1000	nA
	Peak on−state voltage	V_{TM}	I_{TM}=70mA	—	1.7	2.8	V
	Holding current	I_H	—	—	1.0	—	mA
	Critical rate of rise of off−state voltage	dv / dt	V_{in}=240Vrms, Ta=85°C (Note 3)	—	500	—	V / μs
	Critical rate of rise of commutating voltage	dv / dt(c)	I_T=15mA, V_{in}=60Vrms (Note 3)	—	0.2	—	V / μs

Coupled Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Trigger LED current	I_{FT}	V_T=6V	—	—	10	mA
Capacitance input to output	C_s	V_S=0, f=1MHz	—	0.8	—	pF
Isolation resistance	R_S	V_S=500V, R.H. ≤ 60%	1×10^{12}	10^{14}	—	Ω
Isolation voltage	BV_S	AC, 1 minute	2500	—	—	Vrms
		AC, 1 second, in oil	—	5000	—	
		DC, 1 minute, in oil	—	5000	—	Vdc
Turn−on time	t_{ON}	V_D=6→4V, R_L = 100Ω I_F=Rated I_{FT}×1.5	—	—	100	μs

(Note 3) dv / dt test circuit



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